

PATENT ABSTRACTS OF JAPAN

(11)Publication number : 11-002454

(43)Date of publication of application : 06.01.1999

(51)Int.Cl.

F24F 13/14

F24F 1/00

(21)Application number : 09-153568

(71)Applicant : FUJITSU GENERAL LTD

(22)Date of filing : 11.06.1997

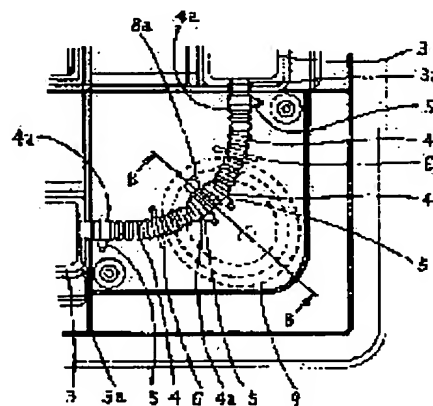
(72)Inventor : GUNJI YOSHIHIRO

(54) CEILING-EMBEDDED-TYPE AIR-CONDITIONING EQUIPMENT

(57)Abstract:

PROBLEM TO BE SOLVED: To facilitate assembly and to reduce the number of parts by connecting the rotation axis of a wind direction plate being adjacent to the three corner parts of a decorating panel by a hollow bellow-shaped tube being formed, for example, by resin, and by supporting the middle part of the bellow-shaped tube to the decorating panel so that it can be freely rotated.

SOLUTION: A cylinder part 4a where a circular axis hole that is the same as or slightly larger than a rotary axis 3a is formed at both ends of a bellow-shaped tube 4, and the axis hole is embedded and inserted into the rotary axis 3a. Then, the outer periphery of the cylinder part 4a is tied by a binder 5, thus collapsing and sealing the cylinder part 4a. The bellow-shaped tube 4 is embedded and inserted into the U-shaped groove of a rib 6 being formed in one piece at the three corner parts of a decorating panel 1. The bellow-shaped tube 4 is supported by the rib 6, thus connecting the tips of the rotary axes 3a of two wind direction plates 3 without twisting and positively transferring rotation force. A groove cam 9 is driven by a motor and a cam pitman is rocked, thus rotating the wind direction plate 3 by the bellow-shaped tube 4.



BEST AVAILABLE COPY

LEGAL STATUS

[Date of request for examination]

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's
decision of rejection]

[Date of extinction of right]

Copyright (C); 1998,2003 Japan Patent Office

* NOTICES *

JPO and NCIP are not responsible for any
damages caused by the use of this translation.

1.This document has been translated by computer. So the translation may not reflect the original
precisely.

2.**** shows the word which can not be translated.

3.In the drawings, any words are not translated.

CLAIMS

[Claim(s)]

[Claim 1] the neighborhood of a makeup panel -- an outlet -- preparing -- these outlets -- a
wind direction -- the wind direction which the three corner sections of said makeup panel adjoin
in the head-lining flush-type air conditioner which comes to prepare a modification plate,
respectively -- the head-lining flush-type air conditioner characterized by connecting the
rotation shaft of a plate by the bellows-like tube in the air fabricated by resin etc., and coming to
support the middle of a said bellows-like tube on said makeup panel free [rotation].

[Claim 2] The cylinder object which protruded on one place of the three corner sections of said
makeup panel the cam connecting rod which formed the spherule at the head, The rotation shaft
of a wind back board with which this corner section adjoins is connected by said bellows-like
tube. The head-lining flush type air conditioner according to claim 1 characterized by supporting
the middle of a said bellows-like tube free [rotation] on said makeup panel, engaging the
spherule at the head of said cam connecting rod with a grooved cam, and coming to drive this
grooved cam by the motor.

[Claim 3] said wind direction -- the rotation shaft of a plate -- and -- or the cylinder part which
formed the axial hole in the edge of said bellows-like tube while forming D cut in said cylinder
object -- forming -- said axial hole -- said rotation shaft -- and -- or the head-lining flush type
air conditioner according to claim 1 or 2 characterized by fitting in said cylinder object and
coming to band together with a binder etc. in the periphery of said cylinder part.

[Claim 4] the configuration of said axial hole -- D cut configuration -- carrying out -- a coaxial
hole -- said rotation shaft -- and -- or the head-lining flush type air conditioner according to
claim 1 or 3 characterized by coming to fit in said cylinder object.

[Claim 5] said wind direction -- the head of the rotation shaft of a plate -- and -- or by forming
the crevice where said stop pawl engages with the inner surface of the axial hole of said
bellows-like tube edge, and engaging said stop pawl with this crevice, while forming a stop pawl
at the head of said cylinder object said rotation shaft -- and -- or the head-lining flush type air
conditioner according to claim 1 or 2 characterized by coming to stop said cylinder object and
said bellows-like tube.

[Claim 6] The head-lining flush type air conditioner according to claim 1 to 5 which prepares the
rib in which the slot where said bellows-like tube engages with said makeup panel was formed,
and is characterized by coming to support the middle of said bellows-like tube to this rib.

[Translation done.]

* NOTICES *

JPO and NCIP are not responsible for any damages caused by the use of this translation.

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to a detail more with respect to a head-lining flush type air conditioner at the configuration of the interlock of a wind back board.

[0002]

[Description of the Prior Art] drawing 11 shows the conventional head-lining flush type air conditioner -- as -- four wind directions -- as the device in which a plate 3 is interlocked -- each -- a wind direction -- the wind direction which forms universal fitting 20 at the head of rotation shaft 3a of a plate 3, and adjoins -- it was the configuration of having connected the universal fitting 20 of the axis end of a plate 3, and interlocking it with a shaft 21.

[0003]

[Problem(s) to be Solved by the Invention] However, with this configuration, it was [which it is called universal fitting] comparatively complicated, and since the device with many components mark was used, it was hard to assemble and there were problems, like cost is high. In this invention, in view of the above-mentioned trouble, it is easy to assemble and aims at offering a head-lining flush type air conditioner with few components mark.

[0004]

[Means for Solving the Problem] in order that this invention may solve the above-mentioned technical problem -- the neighborhood of a makeup panel -- an outlet -- preparing -- these outlets -- a wind direction -- the wind direction which the three corner sections of said makeup panel adjoin in the head-lining flush-type air conditioner which comes to prepare a modification plate, respectively -- the rotation shaft of a plate connects by the bellows-like tube in the air which fabricated by resin etc., and it has the composition which supported the middle of a said bellows-like tube free [rotation] on said makeup panel.

[0005] Moreover, the cylinder object which protruded on one place of the three corner sections of said makeup panel the cam connecting rod which formed the spherule at the head, the wind direction which this corner section adjoins -- the rotation shaft of a plate is connected by said bellows-like tube, the middle of a said bellows-like tube is supported free [rotation] on said makeup panel, the spherule at the head of said cam connecting rod is engaged with a grooved cam, and it has the composition of driving this grooved cam by the motor.

[0006] moreover, said wind direction -- the rotation shaft of a plate -- and -- or the cylinder part which formed the axial hole in the edge of said bellows-like tube while forming D cut in said cylinder object -- forming -- said axial hole -- said rotation shaft -- and -- or it fits in said cylinder object and has the composition of having banded the periphery of said cylinder part together with the binder etc.

[0007] moreover, the configuration of said axial hole -- D cut configuration -- carrying out -- a coaxial hole -- said rotation shaft -- and -- or it has composition fitted in said cylinder object.

[0008] moreover, said wind direction -- the head of the rotation shaft of a plate -- and -- or the thing which the crevice where said stop pawl engages with the inner surface of the axial hole of said bellows-like tube edge is formed, and is engaged with this crevice in said stop pawl while forming a stop pawl at the head of said cylinder object -- said rotation shaft -- and -- or it has the composition of having stopped said cylinder object and said bellows-like tube.

[0009] Furthermore, the rib in which the slot where said bellows-like tube engages with said

makeup panel was formed is prepared, and it has composition which supported the middle of said bellows-like tube to this rib.

[0010]

[Embodiment of the Invention] With the above configurations, it is easy to assemble and becomes a head-lining flush type air conditioner with few components mark.

[0011]

[Example] First, one example of this invention shown by drawing 1 thru/or drawing 8 is explained. In the center of the makeup panel 1 which turned to and installed the lower part in the head-lining side, inlet port 11 Form four outlets 2 which turned to a direction which is different on all sides [periphery section], and the wind back board 3 is formed in this outlet 2. The blower fan 14 which drives a filter 12 by the motor 13 up is formed in the top face of said inlet port 11. the air which formed the heat exchanger 15 in the periphery of the fan 14 of the broadcasting style, filtered and inhaled indoor air with said filter 12 from said inlet port 11 with said blower fan 14, and carried out heat exchange by said heat exchanger 15 -- said outlet 2 -- said wind direction -- with a plate 3, a wind direction is adjusted and it blows off. the wind direction fabricated by resin, such as ABS, -- rotation shaft 3a formed in the ends of a plate 3 is supported rotatable in bearing formed in the rear face of said makeup panel 1 of the both sides of said outlet 2. D cut 3b is formed at each head of rotation shaft 3a of two wind back boards 3 which three corner sections 1a of said makeup panel 1 is alike, respectively, and adjoin at the include angle of 90 degrees. Cylinder web materials, such as vinylchloride resin, are formed in the bellows-like tube 4 in the air in blow molding. To the ends of the said bellows-like tube 4, the periphery of said cylinder part 4a by banding together with a binder 5 by preparing cylinder part 4a in which said rotation shaft 3a and EQC, or a little axial hole big 4[circular] b was formed, and fitting said axial hole 4b in said rotation shaft 3a Crushing and said D cut 3b become a baffle, and said cylinder part 4a fixes. The rib 6 in which slot 6a of slightly bigger U typeface than the appearance of said bellows-like tube 4 was formed is formed in one, and said bellows-like tube 4 is fitted in three corner sections 1a of said makeup panel 1 at slot 6a of U typeface of this rib 6. By supporting to said rib 6, said bellows-like tube 4 is connected without twisting between the heads of rotation shaft 3a of two wind back boards 3 which adjoin at said include angle of 90 degrees, and transmits the rotation force certainly. D cut 8c is formed in the ends of the cylinder object 8 which protruded on one place of three corner sections 1a of said makeup panel 1 cam connecting rod 8b which formed spherule 8a at the head. Said cylinder object 8, Rotation shaft 3a of the wind back board 3 which said corner section adjoins is connected by said bellows-like tube 4, respectively. By supporting the middle of the said bellows-like tube 4 free [rotation] with said rib 6 on said makeup panel 1, engaging spherule 8a at the head of said cam connecting rod 8b with slot 9a of a grooved cam 9, and driving this grooved cam 9 by the motor 10 Said cam connecting rod 8b rocks, and the wind back board 3 connected by said bellows-like tube 4 rotates. Moreover, since it is circular, even if the phase of axial hole 4b of said bellows-like tube 4 of D cut 3b of said rotation shaft 3a and D cut 8c of said cylinder object 8 does not suit, it can adjust at the time of assembly.

[0012] Next, other examples shown by drawing 9 are explained. The configuration of axial hole 4b formed in said cylinder part 4a differs from said example. Said rotation shaft 3a is made into an example, and is explained. The rotation force can be certainly transmitted only by inserting said rotation shaft 3a in said axial hole 4b by making into D cut configuration corresponding to D cut 3b of said rotation shaft 3a the configuration of axial hole 4b formed in said cylinder part 4a. In addition, also in this example, if the periphery of said cylinder part 4a is together banded with a binder etc., an omission can be prevented more certainly.

[0013] Next, other examples shown by drawing 10 are explained. said example -- said wind direction -- the stop approaches of rotation shaft 3a of a plate 3 and said cylinder object 8, and the bellows-like tube 4 differ. Said rotation shaft 3a is made into an example, and is explained. The stop pawl 7 which consists of two pillar-shaped sections 7b which projected in the shaft orientations of this rotation shaft 3a, and this pillar-shaped section 7b from lobe 7a which projected in the direction of a periphery of said rotation shaft is formed at the head of rotation shaft 3a of the aforementioned style back board 3 at one. On the other hand, two crevice 4c to

which said stop pawl 7 engages with the inner surface of cylinder part 4a of the ends of said bellows-like tube 4 is formed face to face. By inserting said stop pawl 7 in said cylinder part 4a, and pressing down lobe 7a of said stop pawl 7 from said cylinder part 4a periphery, the stop pawl 7 is bent by the elasticity of said pillar-shaped section 7b inside, and said cylinder part 4a fits in said rotation shaft 3a. If lobe 7a of said stop pawl 7 is inserted to the location of said crevice 4c, said lobe 7a will be caught in said crevice 4c with the elasticity of said pillar-shaped section 7b, and will be stopped. The rotation force is transmitted while preventing that said bellows-like tube 4 falls out from said rotation shaft 3a when said stop pawl 7 is caught in said crevice 4c.

[0014]

[Effect of the Invention] As explained above, according to this invention, it is easy to assemble and becomes a head-lining flush type air conditioner with few components mark.

[Translation done.]

*** NOTICES ***

JPO and NCIP are not responsible for any damages caused by the use of this translation.

1.This document has been translated by computer. So the translation may not reflect the original precisely.

2.**** shows the word which can not be translated.

3.In the drawings, any words are not translated.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the sectional view seen from the side face which shows the whole head-lining flush type air conditioner configuration by this invention.

[Drawing 2] It is the top view which looked at the makeup panel of the head-lining flush type air conditioner by this invention from the rear face.

[Drawing 3] It is the important section top view seen from the rear face which shows one example of the head-lining flush type air conditioner by this invention.

[Drawing 4] It is the important section top view seen from the rear face which shows one example of the head-lining flush type air conditioner by this invention.

[Drawing 5] It is the important section exploded view obtained from the rear face which shows one example of the head-lining flush type air conditioner by this invention.

[Drawing 6] It is the important section strabism exploded view showing one example of the head-lining flush type air conditioner by this invention.

[Drawing 7] It is the important section AA sectional view showing one example of the head-lining flush type air conditioner by this invention.

[Drawing 8] It is the important section BB sectional view showing one example of the head-lining flush type air conditioner by this invention.

[Drawing 9] It is the important section strabism exploded view showing other examples of the head-lining flush type air conditioner by this invention.

[Drawing 10] It is the important section strabism exploded view showing other examples of the head-lining flush type air conditioner by this invention.

[Drawing 11] It is the important section perspective view of the head-lining flush type air conditioner by the conventional example.

[Description of Notations]

1 Makeup Panel

1a Corner section

2 Outlet
3 Wind Back Board
3a Rotation shaft
3b D cut
4 Bellows-like Tube
4a Cylinder part
4b Axial hole
4c Crevice
5 Binder
6 Rib
6a Slot
7 Stop Pawl
8 Cylinder Object
8a Spherule
8b Cam connecting rod
8c D cut
9 Grooved Cam
10 Motor

[Translation done.]

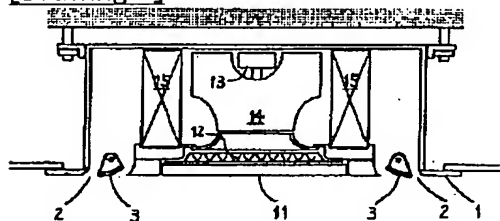
* NOTICES *

JPO and NCIP are not responsible for any damages caused by the use of this translation.

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

DRAWINGS

[Drawing 1]



[Drawing 2]

(19) 日本国特許庁 (J P)

(12) 公開特許公報 (A)

(11) 特許出願公開番号

特開平11-2454

(43) 公開日 平成11年(1999) 1月6日

(51) Int.Cl.⁶

F 2 4 F 13/14
1/00

識別記号

4 0 1

F I

F 2 4 F 13/14
1/00

H

4 0 1 C

審査請求 未請求 請求項の数 6 O L (全 5 頁)

(21) 出願番号

特願平9-153568

(22) 出願日

平成9年(1997) 6月11日

(71) 出願人 000006611

株式会社富士通ゼネラル

神奈川県川崎市高津区末長1116番地

(72) 発明者 郡司 義浩

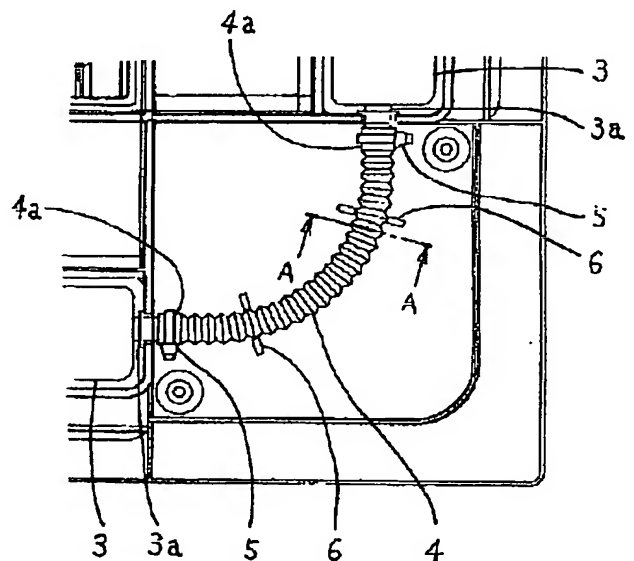
川崎市高津区末長1116番地 株式会社富士
通ゼネラル内

(54) 【発明の名称】 天井埋込形空気調和機

(57) 【要約】

【課題】 風向板を連動させる機構が、組立て易く、部品点数の少ない天井埋込形空気調和機を提供する。

【解決手段】 化粧パネル1の四辺に吹出口2を設け、これら吹出口2に風向変更板3を夫々設けてなる天井埋込形空気調和機において、前記化粧パネル1の三つのコーナー部1aの隣接する風向板3の回転軸3aを、樹脂等で成形した中空の蛇腹状チューブ4にて連結し、同蛇腹状チューブ4の途中を前記化粧パネル1に回転自在に支持した。



【特許請求の範囲】

【請求項1】化粧パネルの四辺に吹出口を設け、これら吹出口に風向変更板を夫々設けてなる天井埋込形空気調和機において、

前記化粧パネルの三つのコーナー部の隣接する風向板の回動軸を、樹脂等で成形した中空の蛇腹状チューブにて連結し、同蛇腹状チューブの途中を前記化粧パネルに回動自在に支持してなることを特徴とする天井埋込形空気調和機。

【請求項2】前記化粧パネルの三つのコーナー部の一箇所に、先端に球状体を形成したカム連接棒を突設した円柱体と、同コーナー部の隣接する風向板の回動軸とを前記蛇腹状チューブにて連結し、同蛇腹状チューブの途中を前記化粧パネルに回動自在に支持し、前記カム連接棒の先端の球状体を溝カムに係合し、同溝カムをモーターにて駆動してなることを特徴とする請求項1記載の天井埋込形空気調和機。

【請求項3】前記風向板の回動軸および、または前記円柱体にDカットを形成する一方、前記蛇腹状チューブの端部に軸穴を形成した筒部を形成し、前記軸穴を前記回動軸および、または前記円柱体に嵌挿し、前記筒部の外周を、バインダー等により結束してなることを特徴とする請求項1または請求項2記載の天井埋込形空気調和機。

【請求項4】前記軸穴の形状をDカット形状とし、同軸穴を前記回動軸および、または前記円柱体に嵌挿してなることを特徴とする請求項1または請求項3記載の天井埋込形空気調和機。

【請求項5】前記風向板の回動軸の先端および、または前記円柱体の先端に係止爪を形成する一方、前記蛇腹状チューブ端部の軸穴の内面に前記係止爪に係合する凹部を形成し、同凹部に前記係止爪に係合することにより、前記回動軸および、または前記円柱体と前記蛇腹状チューブとを係止してなることを特徴とする請求項1または請求項2記載の天井埋込形空気調和機。

【請求項6】前記化粧パネルに前記蛇腹状チューブが係合する溝を形成したリブを設け、同リブに前記蛇腹状チューブの途中を支持してなることを特徴とする請求項1乃至請求項5記載の天井埋込形空気調和機。

【発明の詳細な説明】**【0001】**

【発明の属する技術分野】本発明は、天井埋込形空気調和機に係わり、より詳細には、風向板の連動機構の構成に関する。

【0002】

【従来の技術】従来の天井埋込形空気調和機は、図11で示すように、四つの風向板3を連動させる機構として、各風向板3の回動軸3aの先端に、ユニバーサル継手20を設け、隣接する風向板3の軸端のユニバーサル継手20を軸21にて連結して連動させる構成であった。

た。

【0003】

【発明が解決しようとする課題】しかしながら、本構成では、ユニバーサル継手という比較的複雑で部品点数が多い機構を利用しているため、組立て難く、コストが高い等の問題があった。本発明においては、上記の問題点に鑑み、組立て易く、部品点数の少ない天井埋込形空気調和機を提供することを目的とする。

【0004】

【課題を解決するための手段】本発明は、上記課題を解決するため、化粧パネルの四辺に吹出口を設け、これら吹出口に風向変更板を夫々設けてなる天井埋込形空気調和機において、前記化粧パネルの三つのコーナー部の隣接する風向板の回動軸を、樹脂等で成形した中空の蛇腹状チューブにて連結し、同蛇腹状チューブの途中を前記化粧パネルに回動自在に支持した構成となっている。

【0005】また、前記化粧パネルの三つのコーナー部の一箇所に、先端に球状体を形成したカム連接棒を突設した円柱体と、同コーナー部の隣接する風向板の回動軸とを前記蛇腹状チューブにて連結し、同蛇腹状チューブの途中を前記化粧パネルに回動自在に支持し、前記カム連接棒の先端の球状体を溝カムに係合し、同溝カムをモーターにて駆動する構成となっている。

【0006】また、前記風向板の回動軸および、または前記円柱体にDカットを形成する一方、前記蛇腹状チューブの端部に軸穴を形成した筒部を形成し、前記軸穴を前記回動軸および、または前記円柱体に嵌挿し、前記筒部の外周を、バインダー等により結束した構成となっている。

【0007】また、前記軸穴の形状をDカット形状とし、同軸穴を前記回動軸および、または前記円柱体に嵌挿した構成となっている。

【0008】また、前記風向板の回動軸の先端および、または前記円柱体の先端に係止爪を形成する一方、前記蛇腹状チューブ端部の軸穴の内面に前記係止爪に係合する凹部を形成し、同凹部に前記係止爪に係合することにより、前記回動軸および、または前記円柱体と前記蛇腹状チューブとを係止した構成となっている。

【0009】更に、前記化粧パネルに前記蛇腹状チューブが係合する溝を形成したリブを設け、同リブに前記蛇腹状チューブの途中を支持した構成となっている。

【0010】

【発明の実施の形態】以上のような構成にて、組立て易く、部品点数の少ない天井埋込形空気調和機となる。

【0011】

【実施例】先ず、図1乃至図8にて示す、本発明の一実施例について説明する。天井面に下方を向いて設置した化粧パネル1の中央に吸込口11を、外周部四辺に異なる方向を向いた四つの吹出口2を設け、同吹出口2に風向板3を設け、前記吸込口11の上面にフィルタ12

を、上方にモーター13にて駆動される送風ファン14を設け、同送風ファン14の外周に熱交換器15を設け、前記送風ファン14にて、前記吸込口11より室内空気を前記フィルタ12にて濾過して吸込み、前記熱交換器15にて熱交換した空気を前記吹出口2より、前記風向板3にて風向を調整して吹き出す。ABS等の樹脂で成形した風向板3の両端に形成した回動軸3aを、前記吹出口2の両側の前記化粧パネル1の裏面に形成した軸受部にて、回動可能に支持する。前記化粧パネル1の三つのコーナー部1aの夫々にて90°の角度で隣接する二つの風向板3の回動軸3aの先端夫々にDカット3bを形成する。塩化ビニール樹脂等の円筒シート材をブロー成形にて中空の蛇腹状チューブ4に形成し、同蛇腹状チューブ4の両端に、前記回動軸3aと同等もしくは若干大きな円形の軸穴4bを形成した筒部4aを設け、前記軸穴4bを前記回動軸3aに嵌挿し、前記筒部4aの外周をバインダー5にて結束することにより、前記筒部4aがつぶれ、前記Dカット3bが回り止めとなり固着する。前記化粧パネル1の三つのコーナー部1aに、前記蛇腹状チューブ4の外形より僅かに大きなU字形の溝6aを形成したリブ6を一体に形成し、同リブ6のU字形の溝6aに、前記蛇腹状チューブ4を嵌挿する。前記蛇腹状チューブ4は前記リブ6に支えられることにより、前記90°の角度で隣接する二つの風向板3の回動軸3aの先端の間を挟むことなく連結し、回動力を確実に伝達する。前記化粧パネル1の三つのコーナー部1aの一箇所に、先端に球状体8aを形成したカム連接棒8bを突設した円柱体8の両端にDカット8cを形成し、前記円柱体8と、前記コーナー部の隣接する風向板3の回動軸3aとを夫々前記蛇腹状チューブ4にて連結し、同蛇腹状チューブ4の途中を前記化粧パネル1に、前記リブ6により回動自在に支持し、前記カム連接棒8bの先端の球状体8aを溝カム9の溝9aに係合し、同溝カム9をモーター10にて駆動することにより、前記カム連接棒8bが揺動し、前記蛇腹状チューブ4にて連結された風向板3が回動する。また、前記蛇腹状チューブ4の軸穴4bが円形であるため、前記回動軸3aのDカット3bと前記円柱体8のDカット8cとの位相が合っていないなくても、組立時に調整することができる。

【0012】次に、図9にて示す、他の実施例について説明する。前記実施例とは、前記筒部4aに形成した軸穴4bの形状が異なる。前記回動軸3aを例にして説明する。前記筒部4aに形成した軸穴4bの形状を、前記回動軸3aのDカット3bに対応したDカット形状とすることにより、前記回動軸3aを前記軸穴4bに挿入するだけで確実に回動力を伝達することができる。なお、本例においても、前記筒部4aの外周をバインダー等にて結束すれば、より確実に抜けを防止することができる。

【0013】次に、図10にて示す、他の実施例につい

て説明する。前記実施例とは、前記風向板3の回動軸3aおよび前記円柱体8と蛇腹状チューブ4との係止方法が異なる。前記回動軸3aを例にして説明する。前記風向板3の回動軸3aの先端に、同回動軸3aの軸方向に突出した二本の柱状部7bと、同柱状部7bより前記回動軸の外周方向に突出した突出部7aとよりなる係止爪7を一体に形成する。一方、前記蛇腹状チューブ4の両端の筒部4aの内面に前記係止爪7に係合する凹部4cを対向して二箇所形成する。前記筒部4aに前記係止爪7を挿入し、前記筒部4a外周より前記係止爪7の突出部7aを押さえることにより、前記柱状部7bの弾性にて係止爪7が内側に撓み、前記筒部4aが前記回動軸3aに嵌挿する。前記係止爪7の突出部7aが前記凹部4cの位置まで挿入されると、前記突出部7aは前記柱状部7bの弾性により前記凹部4cに引っ掛かり係止される。前記係止爪7が前記凹部4cに引っ掛かることにより、前記回動軸3aから前記蛇腹状チューブ4が抜けることを防止するとともに、回動力を伝達する。

【0014】

【発明の効果】以上説明したように、本発明によれば、組立て易く、部品点数の少ない天井埋込形空気調和機となる。

【図面の簡単な説明】

【図1】本発明による天井埋込形空気調和機の全体構成を示す側面から見た断面図である。

【図2】本発明による天井埋込形空気調和機の化粧パネルを裏面から見た平面図である。

【図3】本発明による天井埋込形空気調和機の一実施例を示す裏面から見た要部平面図である。

【図4】本発明による天井埋込形空気調和機の一実施例を示す裏面から見た要部平面図である。

【図5】本発明による天井埋込形空気調和機の一実施例を示す裏面から見た要部分解図である。

【図6】本発明による天井埋込形空気調和機の一実施例を示す要部斜視分解図である。

【図7】本発明による天井埋込形空気調和機の一実施例を示す要部AA断面図である。

【図8】本発明による天井埋込形空気調和機の一実施例を示す要部BB断面図である。

【図9】本発明による天井埋込形空気調和機の実施例を示す要部斜視分解図である。

【図10】本発明による天井埋込形空気調和機の実施例を示す要部斜視分解図である。

【図11】従来例による天井埋込形空気調和機の要部斜視図である。

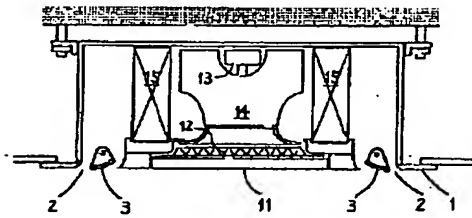
【符号の説明】

- 1 化粧パネル
- 1a コーナー部
- 2 吹出口
- 3 風向板

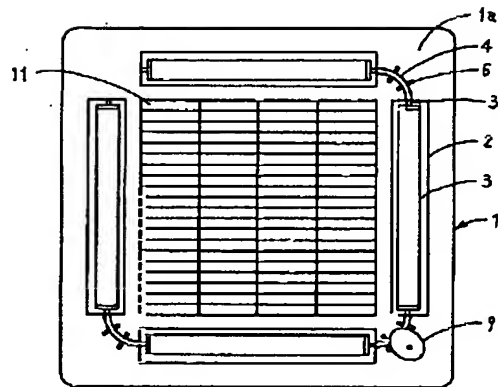
- 3 a 回転軸
3 b Dカット
4 蛇腹状チューブ
4 a 筒部
4 b 軸穴
4 c 凹部
5 バインダー
6 リブ

- 6 a 溝
7 係止爪
8 円柱体
8 a 球状体
8 b カム連接棒
8 c Dカット
9 溝カム
10 モーター

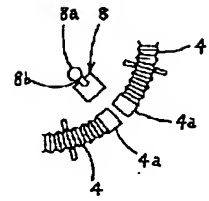
【図1】



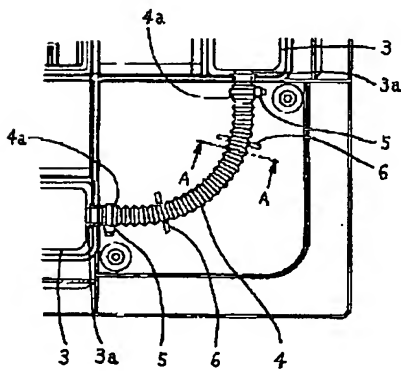
【図2】



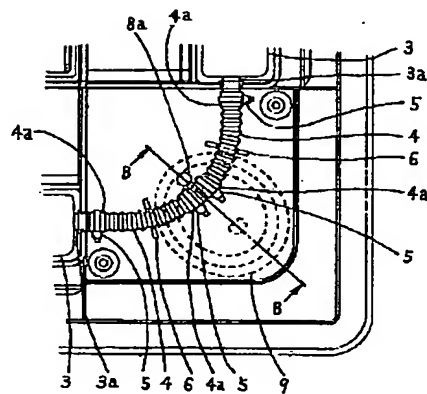
【図5】



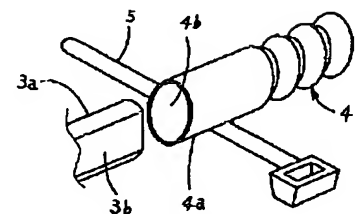
【図3】



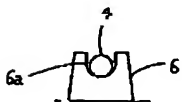
【図4】



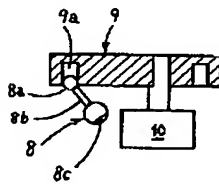
【図6】



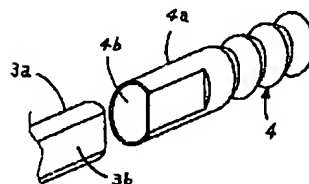
【図7】



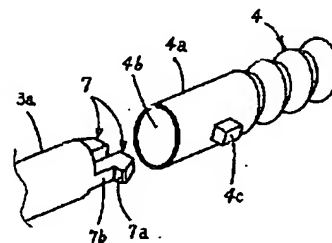
【図8】



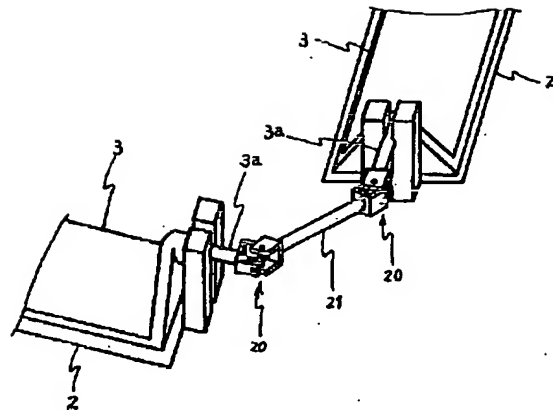
【図9】



【図10】



【図11】



This Page is inserted by IFW Indexing and Scanning
Operations and is not part of the Official Record

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- ☒ BLACK BORDERS
- ☒ IMAGE CUT OFF AT TOP, BOTTOM OR SIDES
- ☒ FADED TEXT OR DRAWING
- ☐ BLURED OR ILLEGIBLE TEXT OR DRAWING
- ☐ SKEWED/SLANTED IMAGES
- ☒ COLORED OR BLACK AND WHITE PHOTOGRAPHS
- ☐ GRAY SCALE DOCUMENTS
- ☐ LINES OR MARKS ON ORIGINAL DOCUMENT
- ☐ REPERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY
- ☐ OTHER: _____

IMAGES ARE BEST AVAILABLE COPY.

**As rescanning documents *will not* correct images
problems checked, please do not report the
problems to the IFW Image Problem Mailbox**